MINTZ LEVIN

Richard A. Kanoff | 617 348 3070 | rakanoff@mintz.com

One Financial Center
Boston, MA 02111
617-542-6000
617-542-2241 fax
www.mintz.com

September 10, 2007

HAND DELIVERED AND ELECTRONIC MAIL

Mary L. Cottrell, Secretary
Department of Public Utilities
One South Station - 2nd Floor
Boston, MA 02110

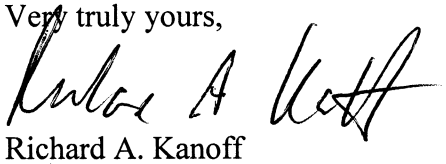
Re: Investigation by the Department of Public Utilities on its own Motion into Rate Structures that will Promote Efficient Deployment of Demand Resources, D.P.U. 07-50

Dear Secretary Cottrell:

Please find attached an original and Seventeen (17) copies of the Comments of CURRENT Group, LLC in the above-captioned matter and its request to participate in panels.

The Comments are also being submitted in electronic format by e-mail attachment to dpu.efiling@state.ma.us.

Very truly yours,



Richard A. Kanoff

RAK/des

Enclosures

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Statement of Interest
Of CURRENT Group, LLC
To Participate in Panels
In Docket No. 07-50

Proposed Panelist:	Jay Birnbaum Senior Vice President and General Counsel 20420 Century Boulevard Germantown, Maryland 20874
Qualifications:	Jay Birnbaum has been involved in the real-world deployment of Smart Grid systems by CURRENT for several years and has testified before numerous State Commissions and multiple times before Congress.
Subject matter:	Aspects of a revised ratemaking process that would be necessary to encourage the deployment of Smart Grids in Massachusetts, and why such deployment is consistent with the goals as stated in D.P.U. 07-50.
Basis	Smart Grid is a demand resource that in turn supports other demand resources and accordingly creates significant, cost-effective benefits for Massachusetts consumers. The extent to which a modified rate structure and revenue recovery mechanism will create incentives for the deployment of Smart Grid throughout Massachusetts, and the extent to which such deployment will meet the policy goals noted by the Department, will be discussed as part of the panel discussion.

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THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC UTILITIES

INVESTIGATION BY THE DEPARTMENT OF PUBLIC UTILITIES ON ITS OWN MOTION INTO RATE STRUCTURES THAT WILL PROMOTE EFFICIENT DEPLOYMENT OF DEMAND RESOURCES	D.P.U. 07-50

Initial Comments of CURRENT Group, LLC

Respectfully submitted,

Harry Wingo
CURRENT Group, LLC
Vice President, Government and Regulatory Affairs
Current Group, LLC
20420 Century Boulevard
Germantown, Maryland 20874
(240) 449-7443 (phone)

September 10, 2007

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC UTILITIES

INVESTIGATION BY THE DEPARTMENT OF PUBLIC UTILITIES ON ITS OWN MOTION INTO RATE STRUCTURES THAT WILL PROMOTE EFFICIENT DEPLOYMENT OF DEMAND RESOURCES	D.P.U. 07-50

Executive Summary of CURRENT Group, LLC

CURRENT, a privately held company, provisions a fully automated, real-time, two-way interactive network that overlays on the existing electric distribution network to create an efficient, automated, "Smart Grid" that enables demand response, automated meter reading, distribution automation, real time outage and restoration detection as well as outage avoidance through real time network monitoring, and other advanced utility applications for the electric distribution network. CURRENT supports the Department's efforts to restructure existing ratemaking practices.

As the Department formulates a revised ratemaking process to remove electric companies' incentive to maximize sales at the expense of energy conservation, the Department should also consider mechanisms that encourage the deployment of full fledged Smart Grids that provide this additional functionality in addition to demand response programs and automated meter reading. CURRENT supports and encourages fuller development of traditional energy efficiency programs such as improved weatherization and more stringent appliance standards. At the same time, new approaches – and new technologies – are essential if Massachusetts wishes to achieve the full potential of energy efficiency programs. Simply doing "more of the same" will not ensure the State's energy security.

Demand response programs employing "future proof," advanced technology will help achieve the Department's goals as set forth in its Order:

- Promoting the most efficient use of society's resources
- Lowering customer bills through increased end-use efficiency
- Enhancing the price-responsiveness of wholesale electricity markets
- Mitigating the risks associated with climate change
- Minimizing the environmental impacts of energy production, transportation, and use

Specifically, employment of these advance metering technologies will enable consumers to reduce usage and bills, reduce peak energy demand and mitigate the need to install more expensive generating facilities to meet demand. These metering technologies have successfully reduced usage and energy demand in programs underway in other states. The Electric Power Research Institute (EPRI) and the Federal Energy Regulatory Commission (FERC) estimate significant savings to customers in avoided investments for otherwise required facilities with reductions in greenhouse gas emissions.

With respect to the Department's proposal, CURRENT respectfully urges the Department to ensure that any changes to the existing ratemaking process also include provisions that encourage the effective implementation of demand resource programs such as Smart Grid.

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC UTILITIES

INVESTIGATION BY THE DEPARTMENT OF PUBLIC UTILITIES ON ITS OWN MOTION INTO RATE STRUCTURES THAT WILL PROMOTE EFFICIENT DEPLOYMENT OF DEMAND RESOURCES	D.P.U. 07-50

Comments of CURRENT Group, LLC

Pursuant to the Department of Public Utility's ("DPU" or "Department") June 22, 2007 Order ("Order") opening an investigation into rate structures and revenue recovery mechanisms for electric and gas companies that will promote efficient deployment of demand resources, CURRENT Group, LLC ("CURRENT") is pleased to submit the following comments for the Department's consideration.[1] CURRENT, a privately held company, provisions a fully automated, real-time, two-way interactive network that overlays on the existing electric distribution network to create a "Smart Grid" that supports advanced meter reading, demand response programs, automated distribution automation, and an automated, self-healing grid and grid management system, including many other functions discussed below.

The Department's Order sought comment on a "straw proposal" to decouple rates and promote efficient deployment of demand resources through a modified rate structure that will better align the incentives of utilities with important demand resource, price mitigation, environmental and other policies. The Department noted that its straw

[1] Further information about CURRENT is available at www.currentgroup.com.

proposal is intended to provide incentives that would accelerate the deployment of demand resources to promote the following State, regional and national goals:

- Promoting the most efficient use of society's resources
- Lowering customer bills through increased end-use efficiency
- Enhancing the price-responsiveness of wholesale electricity markets
- Mitigating the risks associated with climate change
- Minimizing the environmental impacts of energy production, transportation, and use

CURRENT's Smart Grid solutions can substantially contribute to achieving these goals. A Smart Grid can also significantly enhance the reliability of the electric grid and reduce the high costs of outages and power disturbances. Further, it can do so with benefits that far outweigh the costs of deploying the Smart Grid.

CURRENT supports the Department's efforts to modify existing utility rate structures to create incentives for electric companies to deploy Smart Grids, which are themselves demand resources and foundational platforms that enhance and optimize other demand resources such as demand response equipment, smart meters and renewable and distributed generation facilities. In addition, CURRENT respectfully urges the Department to ensure that the ratemaking process creates incentives for electric utilities to employ energy saving and greenhouse gas reducing tools such as Smart Grid.[2] Merely removing the disincentive for utilities to employ cost effective approaches to lower electricity consumption will not in itself accomplish the Department's (and Massachusetts') long term important policy goals.

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[2] The Department's Order recognizes both the importance of creating incentives for utilities through ratemaking (e.g., decoupling) to promote energy efficiency, demand response and distributed generation programs and of implementing such programs to reduce "natural gas and electricity demand under high load conditions, moderate electricity and commodity gas prices and volatility on consumer prices." Order at 2. Accordingly, the Department should consider both ratemaking and implementation mechanisms in this case to ensure that the Department's important goals, e.g., lower costs to consumers and reduced demand, are accomplished.

For the reasons stated below, CURRENT urges the Department to revise the ratemaking process in a manner that recognizes the substantial benefits of rapidly deploying Smart Grid systems throughout Massachusetts.

I. Introduction to Smart Grid and Demand Response

CURRENT's Smart Grid infrastructure and services constitutes a "future proof," high bandwidth communications system that serves as a demand resource and enables electric companies to deliver electricity more efficiently, reliably and securely than is possible using the existing electric grid.[3]

CURRENT's Smart Grid employs high bandwidth communications equipment and sensors throughout the electric distribution network, providing continuous monitoring and analytics to create a real-time, two-way, diagnostic command-and-control system. The electric utility can then use this Smart Grid system to read meters and control electric appliances in a demand resource program in intervals as short as one minute. The same Smart Grid can also monitor in real-time and manage virtually every piece of equipment on the electric distribution network to optimize efficiency on the network, and perform real-time power outage *avoidance* as well as real time, pin-point outage and restoration detection. An electric company therefore can monitor and control capacitor banks, transformers, switches, substations and other critical infrastructure, read meters at virtually any interval or "on demand," manage demand resource programs for end users, and measure and coordinate available distributed and renewable energy sources.

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[3] The Department defines demand resources as "installed equipment, measures, programs that reduce end-use demand for electricity or natural gas. Such measures include, but are not limited to, energy efficiency, demand response, and distributed resources." Order at 1.

CURRENT is deploying its Smart Grid in and around Dallas/Fort Worth, Texas with Oncor Electric Delivery (formerly known as TXU Electric Delivery). CURRENT's Texas system, which ultimately will reach almost two million homes and businesses, is already reading advanced meters at 15-minute intervals (as well as on-demand). In addition, the system allows network monitoring that can detect problems before they cause power outages, safety hazards or system quality problems, and it also provides power outage and restoration detection as outages occur. Further, CURRENT is supporting demand side management programs over its Smart Grid network with numerous retail electric providers in Texas. These programs will allow consumers to control specific appliances, measure the performance of other demand resources (e.g., air conditioners and light bulbs), reduce usage during periods of peak demand and reduce the need to build new facilities to meet demand. With fewer facilities required, fuel use (and associated emissions) will be reduced, and commodity prices (e.g., energy costs) will decline.

CURRENT's ongoing activity in Texas demonstrates that Smart Grid is available to be deployed on a cost-effective basis, provided that utilities are given the proper incentives.

II. Benefits of Smart Grid as a Demand Response Resource

Smart Grid enables real-time, two-way communication to smart meters, smart thermostats, smart appliances and in-home energy usage displays. Smart Grid also makes possible innovative demand response and real-time pricing programs that not feasible using more limited technologies, for example by enabling 15-minute (and shorter)

interval data and "on-demand" meter reads.[4] A 2004 Electric Power Research Institute analysis of 11 peer-reviewed studies found that widespread adoption of Smart Grid devices such as an "intelligent air conditioning unit with embedded software and hardware capable of two-way interacting with the power system" could produce a median achievable savings of 24% of total U.S. electricity demand.[5] There is also a rapidly accumulating body of evidence suggesting that providing customers with real-time information about their energy usage and its costs serves, in itself, to reduce consumption.[6]

A Smart Grid connects advanced meters, smart thermostats and other load control devices in homes and businesses directly to the utility through a broadband communications network that overlays the electric distribution system itself. This enables meters and other end-user energy management devices to provide users with information about wholesale prices and reliability events as they change in real-time. Since most consumers, however, do not have the time or desire to monitor and respond to such information (they are normally busy working, caring for their families, etc.) a smart grid allows the utility to administer time of use contracts under which air conditioners can be turned down by a predetermined amount or shut off completely for a short period in order to make available additional megawatts during peak loads. These saved megawatts, are the equivalent of the power that can be brought on line with peaker plants. Unlike

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[4] See, e.g., *Assessment of Demand Response and Advanced Metering*, Federal Energy Regulatory Commission (Staff Report, Sept. 2007) at page 19 ("The use of a smart grid allows for greater implementation of demand response."), available at http://www.ferc.gov/legal/staff-reports/09-07-demand-response.pdf.

[5] Michael W. Howard, SVP, Electric Power Research Institute, *Facilitating the Transition to a Smart Electric Grid*, House Energy & Commerce Subcommittee on Energy and Air Quality, May 3, 2007.

[6] *See, e.g., New Ways to Monitor Your Energy Use --- Utilities Test Prepaid Smart Cards and High-Tech Meters To Help Consumers Keep Tabs on Cost and Consumption,* Wall St. Journal, June 19, 2007.

more traditional reserves, however, Smart Grid "capacity" through demand response is clean and over the long term cheaper because it requires no generation or transmission.

The potential benefits of Smart Grid enabled demand response are considerable. A California pilot recently demonstrated the following demand reductions for 2,500 customers:

- 13% during hottest summer hours if peak prices were 5 times standard price
- 27% during critical times where customer had smart thermostat
- 43% for customers with gateway systems that adjust use of multiple appliances.

The California project had a time interval less than that available with one Smart Grid technology, broadband over powerline communications, which turns the electric wires themselves into the communications link that connects all the advanced meters, smart thermostats and gateway systems as well as the distribution network itself.

Smart Grid can maximize the benefits of demand response measures by automatically initiating distributed generation and load reduction across an entire distribution network, or even across several such networks in a region. The Boston area, which is responsible for a large percentage of the electricity demand in Massachusetts, would benefit greatly from a Smart Grid's ability to maximize the impact of the demand response and time-of-use pricing programs that would be encouraged by the straw proposal.

Smart Grid surpasses many of the advanced metering infrastructure capabilities deployed thus far. Behind the meter, Smart Grid turns every electrical outlet into an IP-protocol enabled "smart socket," a transformation that enables unprecedented measurement and verification for demand resource programs. In front of the meter, Smart Grid is capable of monitoring and controlling every element (transformers, capacitor banks, etc.) on the electric distribution network all the way back to the

substation. Unlike advanced metering-only systems, a Smart Grid dramatically improves the efficiency and reliability of the entire grid, which helps to greatly reduce electricity consumption and greenhouse gas emissions.

In addition,, Smart Grid technologies may be deployed in such a way that ratepayers do not have to pay for the entire cost of deployment. Instead, utilities can retain a third part to build and operate the advanced communications network (at the third party's cost) and provide the utility automated meter reading, demand resource and other services such as distribution automation and outage avoidance through real time distribution network monitoring. The network operator can then use the same network for other commercial applications, thereby defraying much of the network costs away from electric rate payers. CURRENT has implemented this type of arrangement in Texas with Oncor Electric Delivery. Oncor pays CURRENT for meter reading and other Smart Grid Services, but does not have capital at risk in the Smart Grid deployment. The net result is that the utility and ratepayers get these advanced services at a lower cost. In fact, deploying such a system can actually be a source of revenue for a utility, because the network operator pays for pole attachments, electric power and other goods and services. Although no single financial structure will necessarily be appropriate for all utilities or all deployments, this does illustrate how a future-proof, advanced meter reading and demand response program can be attained without requiring that ratepayers front all related costs.

Nationally, peak demand for electricity is forecast to rise by 19% over the next decade, while capital committed to electric generation, transmission and distribution is

expected to grow by only six % during the same period.[7] Yet at the same time Massachusetts and the nation look to meet rising demand, 10% or more of electric energy is lost before it reaches the end user due to network faults or inefficiencies – faults and inefficiencies that can be reduced by a Smart Grid. The additional power that would be made available as a result of eliminating such inefficiencies would make Smart Grids a less costly alternative to deploying additional generation plants, many of which would rely on hydrocarbons that would add to greenhouse gas emissions until technologies like carbon sequestration are implemented. Smart Grid, by contrast, captures efficiencies that make it equivalent to a clean energy resource capable of putting additional megawatts at utilities' disposal from the moment such a system is installed.

There are other important advantages to Smart Grid. The Northeast Blackout of August 2003 and more recent large power outages resulting from storms and other causes underscore the need for Smart Grid systems. Electric distribution networks are aging and facing increasing strain. Existing grids are one-way systems that lack the self-healing, monitoring and diagnostic capabilities essential to meet demand growth and contemporary security challenges. A Smart Grid will take the guess work out of outage and restoration detection. Power system maintenance crews – which themselves are aging, with as much as 40% or more retiring over the next 10 years – will know exactly where and when to go to repair the distribution grid and technicians can expedite power restoration to customers through remote management of switches and other utility infrastructure. Power crews will also know in real time when and to what extent restoration has occurred with each network repair performed, which is further saves on

[7] The Brattle Group, *The Power of Five Percent: How Dynamic Pricing Can Save $35 Billion in Electricity Costs*, Discussion Paper filed with the Massachusetts Public Service Department (May 16, 2007) (citing North American Electric Reliability Council, 2006 Long Term Reliability Assessment).

labor costs because customers do not generally call to notify utilities of effective power restoration. Smart Grid-assisted outage management will reduce the occurrence and duration of outages and facilitate restoration to high priority users such as hospitals, police stations, National Guard facilities, and to those whose lives depend on medical equipment.

Moreover, a Smart Grid also can provide crucial support for homeland and utility critical infrastructure security. For instance, CURRENT's high bandwidth Smart Grid system provides a direct data link to security cameras that provide real-time video monitoring of critical utility assets, such as substations, as well as non-utility critical infrastructure, such as State and local government facilities. In addition, a Smart Grid enables life-saving monitors capable of detecting biological hazards, radiation or even structural defects in bridges to be connected in a real-time to local or national public safety systems.

III. Benefits of Smart Grid in Massachusetts

Smart Grid solutions can help Massachusetts to meet Governor Patrick's goal of conserving more electricity every year and moderating overall demand, at much less than the cost of building new power plants.[8] Specifically, Smart Grid will accelerate and enhance the effective deployment of demand resources in Massachusetts while increasing the reliability and efficiency of the entire electric distribution network. This will allow enable companies to provide safer, more reliable power at lower cost to end users.

Moreover, Smart Grid is itself a demand resource as well as a platform that can serve to enhance and optimize other demand resources. For example, a smart meter is

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[8] *See*, Peter J. Howe, *Patrick plans conservation to meet rising energy needs: Aim is to avoid building new power plants*, Boston Globe (June 25, 2007) at A1.

only as "smart" and robust as the communications network that transmits the usage and pricing data between the electric company and end use customers. Although narrowband infrastructure that depends on slow-speed and "best effort" wireless solutions may appear cost-effective, such narrowband systems face the prospect of becoming obsolete soon after their deployment. In contrast, a Smart Grid system based upon a high-bandwidth communications platform offers much more functionality, network improvements and savings. Smart Grid, for instance, can connect utilities to nearly every distribution network element on their networks in addition to every appliance on each end user's premises through a network that would not soon become obsolete.

In addition to real-time outage detection, management and restoration, such a "future proof" system has the capacity to support additional applications for years to come as Massachusetts makes a transition to new energy solutions. For example, distributed generation is a demand resource that smart grid enhances and optimizes. Distributed generation that involves clean energy sources such as wind or solar power by their nature vary with weather, time of day, and other factors. And all distributed generation sources are provided on a relatively small scale and can prove variable. The real-time, two-way information flows and control capabilities provided by a robust Smart Grid optimizes the use of such resources by enabling the utility and end users to match consumption to the availability of such energy sources. End users, for instance, can avoid using discretionary appliances like a pool pump at times when such sources are not available.

Smart Grid is available today and can be deployed on a cost-effective basis, provided that utilities are given the proper incentives. CURRENT supports the straw

proposal because it will create such incentives by removing the strong economic incentives that utilities now have to increase supply rather than employ greater efficiency. The straw proposal would make it more attractive for a utility to choose demand resources that can empower customers to dramatically lower costs for rate payers.

IV. The Department's Proposal

CURRENT supports the straw proposal, but respectfully urges the Department to also consider such Smart Grid infrastructure along with regulatory flexibility and other incentives that would enable cost-effective deployment by utilities or third-party providers. Third-party provisioning of Smart Grid can minimize the capital expenditures required by utilities themselves and therefore provide Massachusetts ratepayers with the most advanced, currently available advanced metering and competitively neutral demand resource capabilities at the lowest cost.

CURRENT respectfully submits that following implementation of a modified rate structure like that in the straw proposal, adoption of Smart Grid throughout Massachusetts would benefit all ratepayers, produce energy savings commensurate with its cost, produce measurable and verifiable reductions in electricity consumption, and produce long-term benefits for the Commonwealth.[9] Removing the disincentive for utilities to reduce energy consumption is a necessary but not sufficient step to meeting the Department's goals. Broader, cost-effective approaches like Smart Grid are also required.

[9] Since Smart Grid creates a two-way, real-time communications path between utilities and every device connected to the electric grid, it would as an automatic measurement and verification tool for other demand resource programs.

V. Conclusion

As the Department formulates a revised ratemaking process to remove utilities' incentives to maximize sales at the expense of energy conservation, the Department should consider mechanisms that may be necessary to encourage the deployment of Smart Grid demand response programs. CURRENT supports and encourages fuller development of traditional energy efficiency programs such as improved weatherization and more stringent appliance standards. In addition, new approaches – and new technologies – are essential if Massachusetts wishes to achieve the full potential of energy efficiency programs. Simply doing "more of the same" will not ensure the State's energy security.

For the reasons stated above, CURRENT urges the Department to formulate any revisions to the ratemaking process in a manner that recognizes the substantial benefits of the deployment of Smart Grid systems throughout Massachusetts.

Respectfully submitted,

/s/Harry Wingo
Harry Wingo
Vicepresident
Governemnt & Regulatory Affairs
CURRENT Group, LLC

September 10, 2007